Structure and dynamics of Procyon A by a seismological approach

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The success of helioseismology has spurred investigators to search for similar oscillations in other Sun-like stars and extend this diagnostic technique to become "asteroseismology". In anticipation of data that several planned space missions, including MONS satellite (Measuring Oscillations in Nearby Stars), will be soon devoted to provide, we consider the theoretical prediction of the power spectrum of oscillations of Procyon A, which shows solar-type pulsations, comparing models computed by taking into account an overshooting from the convective core, as well as a diffusion of helium and heavy-elements. We also calculate the frequency modification due to a given internal rotational behaviour, in order to examine the potential of asteroseismology to recognize, and with which accuracy, the possible signature of differential rotation.